



DA Docket No. 16-1244

Before the Federal Communications Commission

Washington, D.C. 20554

To: Office of the Secretary
Federal Communications Commission
Washington, DC 20554

Re: SAT-LOA-20160622-00058

Date: 1 December 2016

**Comment Filed by: Cindy Sage, Co-Editor, BioInitiative Report
on Behalf of the BioInitiative Working Group**

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Dear Mr. Dortch,

Strong concern has been voiced by scientists and public health and environmental policy experts, that the deployment of technologies that expose billions of people worldwide to new sources of pulse-modulated electromagnetic microwave radiation (EMR) is likely to pose a pervasive risk to public health. The BioInitiative Working Group has previously filed comments documenting this evidence in Docket 13-39 (ET Docket No 13-84 - In the Matter of Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies) and Docket No. 03-137 (Regarding Human Exposure to Radiofrequency Electromagnetic Fields).

The proposal under SAT-LOA-20160622-00058 by Boeing Corporation to launch a global network of 2,956 new satellites to provide wireless internet should be denied. Global proliferation of new wireless radiation sources clearly falls within the definition of 'project that has the potential for a significant environmental impact' on both environmental resources (plants and animals, particularly migrating species) and on human health. The FCC cannot ignore current, uncompleted Dockets on health and safety limits, nor it's obligation to fulfill NEPA requirements.

Prolonged exposure appears to disrupt biological processes that are fundamental to plant, animal and human growth and health. Life on earth did not evolve may pose a pervasive risk to public health. Such exposures did not exist before the age of industry and information. Prolonged exposure appears to disrupt biological processes that are fundamental to plant, animal and human growth and health. Life on earth did not evolve with biological protections or adaptive biological responses to these EMF exposures. A rapidly accumulating body of scientific evidence of harm to health and well- being constitute warnings that adverse health effects can occur with prolonged exposures to very low-intensity EMF at biologically active frequencies or frequency combinations.

The FCC should not approve new and involuntary sources of EMR for Boeing or any other similar proposal unless and until the FCC completes it's review of health and safety issues posed by chronic exposure to low-intensity EMR, has completed relevant environmental reviews under NEPA. A positive assertion of safety cannot be made by the FCC on existing levels of exposure posed by wireless technologies (cell phones, cell towers, wireless utility meters, wireless routers, security systems, baby monitors, wireless educational technologies, wireless medical implants, etc). New biologically-based public exposure standards are urgently needed to protect public health world-wide. No one is keeping track of the growing body-burden of EMR, nor health consequences of ever-rising exposure levels. A clear path to identifying and assessing cumulative impacts on global populations of the sum total of EMR from existing sources is urgently needed before the FCC makes any commitment to projects that add to global radiofrequency radiation levels at this scale.

Respectfully submitted:

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APPENDIX A

EVIDENCE THAT CHRONIC EXPOSURE TO LOW-INTENSITY EMR IS TOXIC TO HUMAN HEALTH, REPRODUCTION AND NEUROLOGICAL FUNCTION

The 2012 BioInitiative Report was prepared by 29 authors from ten countries, ten holding medical degrees (MDs), 21 PhDs, and three MsC, MA or MPHs. Among the authors are three former Presidents of the Bioelectromagnetics Society and five full members of BEMS. One distinguished author is the Chair of the Russian National Committee on Non-Ionizing Radiation. Another is a Senior Advisor to the European Environmental Agency. Full titles and affiliations of authors is in Section 25 of the BioInitiative Report at www.bioinitiative.org

The BioInitiative Reports are produced for publication to the broadest possible audience, so placed on the Web. However, much of the BioInitiative Reports content, including updated chapters and new chapters was published in a special two-volume issue of the peer-reviewed journal *Pathophysiology* (August 2009, *Pathophysiology* 16: 2,3). These publications document that chronic exposure to electromagnetic fields (EMF) is associated with increased health risks including cancers (particularly brain cancers), neurological impairment in function and neurological diseases including Alzheimer's disease and ALS, impaired learning, headaches, mental confusion, skin rashes, tinnitus and disorientation. Mental function is impaired. There are more than a dozen studies now establishing significant damage to sperm, resulting in impaired fertility and reproduction.

BioInitiative 2012 Report Conclusions

In twenty-four technical chapters, the BioInitiative Working Group authors discuss the content and implications of about 1800 new studies since 2007. Overall, these new studies report abnormal gene transcription (Section 5); genotoxicity and single-and double-strand DNA damage (Section 6); stress proteins because of the fractal RF-antenna like nature of DNA (Section 7); chromatin condensation and loss of DNA repair capacity in human stem cells (Sections 6 and 15); reduction in free-radical scavengers - particularly melatonin (Sections 5, 9, 13, 14, 15, 16 and 17); neurotoxicity in humans and animals (Section 9); carcinogenicity in humans (Sections 11, 12, 13, 14, 15, 16 and 17); serious impacts on human and animal sperm morphology and function (Section 18); effects on the fetus, neonate and offspring (Section 18 and 19); effects on brain and cranial bone development in the offspring of animals that are exposed to cell phone radiation during pregnancy (Sections 5 and 18); and findings in autism spectrum disorders consistent with EMF/RFR exposure effects. Global precautionary actions that have been taken in countries around the world, and recommended by medical and research experts are documented in Section 22. Use of the Precautionary Principal and it's relevance are presented in Section 23. Key scientific evidence and public health policy recommendations are in Section 24.

1) The 2012 BioInitiative Report concluded again that exposure to EMF and radiofrequency radiation (RFR) produces biological effects and adverse health effects at levels significantly below existing public exposure standards; and substantially below levels identified in 2007.



2) The scientific evidence for health harm in 2012 is stronger and more consistent than in 2007; and the levels of exposure at which biological effects and adverse health impacts are reported to occur are far lower than in 2007.

3) ICNIRP and IEEE/FCC public safety limits remain unchanged and are still inadequate and obsolete with respect to prolonged, low-intensity NIER exposures. Worse, FCC Dockets 13-84, 03-137 and 13-39 propose to significantly relax rather than tighten exposure standards, in stark contrast to what the scientific evidence suggests is needed to protect public health from RFR.

4) Specific absorption rate (SAR) as a measure of compliance with new biologically-based exposure limits should be abandoned. Setting public safety limits based on heating is an unsuitable starting point for developing new standards that properly address chronic exposures to very low-intensity RFR. SAR should not be applied to new biologically-based public exposure standards since by definition SAR is a measure of tissue heating, and the biological effects of NIER are by definition, not due to a heating mechanism. It makes no sense to continue misapplying existing thermal concepts of biological harm, time-averaging and metrics for thermal heating as a basis for detecting and preventing harm from new wireless technologies in the face of strong evidence of harm without measureable heating.

5) New, biologically-based public exposure standards should be developed under the direction of experts in the biological effects and adverse health effects of chronic exposures to electromagnetic fields, drawing upon the substantial international body of scientific and public health literature, and not be limited to individuals in electrical and electronic engineering.

References

1. BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors. BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF) at www.bioinitiative.org, August 31, 2007.
2. BioInitiative Working Group, Cindy Sage and David O. Carpenter, Editors. BioInitiative Report: A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Radiation at www.bioinitiative.org, December 31, 2012.